Practice Workbook

Getting Started with PowerBI

For this workbook, your instructor will walk you through PowerBI through some tasks, then later you will be required to work on the given Exercises together with a peer partner. Furthermore while working through the exercises, you can also consider these [tutorials](#) for guidance.

Instructor Tasks

Pre-requisite Task
- **Installing PowerBI**
  PowerBI is only available on Windows platforms. We will be using PowerBI Desktop during our training which can be downloaded from here [[link](#)] and later installed.

Power BI Query Tasks
- The **Power Query Editor** is the primary data preparation experience, where you can connect to a wide range of data sources and apply hundreds of different techniques to your data.
- Within the Query Editor, queries are comprised of data sources and are created to perform transformation steps.
- Let's perform the following essential tasks using the Query Editor:
  - Import data from an Excel file
  - Eliminate or remove a column
  - Rename a column
  - Filter rows by applying filters to a single column
  - Fix metadata by changing the column type
  - Fixing metadata by changing or updating the table name
  - Combine data into a single table i.e. two excel files
  - Duplicate a query/table and rename the new query
  - Split a column by a delimiter
  - Perform unpivoting to transform columns into rows
  - Replace values with the desired text
  - Save query changes and close the editor
- Data File
  - Titles dataset (Excel File): https://bit.ly/3G9ITVz

PowerBI Data Model
- The **PowerBI Data Model** is a collection of loaded tables of data, relationships between the loaded tables, and the measures (formulas) written that apply the business rules to the raw data to extract business insights.
- Within the PowerBI Data Model, model tables are loaded from queries and enhanced with relationships, property settings, and calculations.

- Let's perform the following tasks:
    - Add or change a description to a table
    - Hide identifier columns
    - Review column data types
    - Configure column formatting
    - Create a calculated column
        - DAX: Movie URL = "https://www.imdb.com/title/" & [Movie ID]
    - Create a Measure
        - DAX: Movie Count = COUNTROWS(Movies)
- Data File:
    - The titles dataset.

PowerBI Report
- A **PowerBI Report** is a multi-perspective view of a dataset, with visuals that represent different findings and insights from that dataset.
- Let's perform the following tasks inside a report page:
    - Create a table and another visualization type
    - Copy and modify a table
    - Create a static element i.e. logo, textbox, or rectangle
    - Explore customization options:
        - Adjust the size of a visualization
        - Remove gridlines from a chart
        - Change the title of a chart
        - Change the format properties of a chart title
        - Change the text size within a table
        - Rename a Page
        - Review page properties
        - Set the page background
        - Configure the mobile layout
    - Publish a report to the PowerBI Service.
        - Requirements: PBIX File, PowerBI Service account.
- Data Files:
    - The titles dataset.

Student Tasks

Section 1: Working with the Query Editor

Exercise 1

Load an Excel workbook of Disney princesses, and create a table from this.

Dataset

https://bit.ly/3HS3Sx2

Steps

- Create a new Power BI file, and load the Excel workbook containing a list of the Disney Princesses.
- Hide a couple of columns that we're not interested in (First appeared and Vehicle fields).
- Create a table showing the number of films by feminist rating (change the summarisation option to do this)

Exercise 2

Create relationships between tables.

Dataset

https://bit.ly/3CP5hkp

Steps

- Import the Events, Category, and Country tables from the WorldEvents.xlsx file.
- Look in Relationship View to see what has happened.
- On the Home tab of the toolbar find Manage Relationships.
- This will create a window where there are two dropdowns. From these select the two tables you want to join together. It doesn't matter the order in which you choose them.
- Click on a column from each table to create a join. In this case, each Event has a corresponding Country. EventCountryID and CountryID pair up.
- To connect to another table, find recent sources on the home tab. Bring in the continent table and get ready to create another join.

Exercise 3

Use Query Editor to import and tidy up a list of the richest people.

Dataset
https://bit.ly/3CRrRst

Steps
- Create a new Power BI report, and load the data in the workbook:
- Use Query Editor to make this data look better
    - Change the names of the columns: No. and Net Worth .... to Rank and Billions
    - Replace the word billion with an empty string.
    - Replace the $ symbol with an empty string.
    - Convert the resulting column to a whole number.
    - Convert other columns with number figures to the whole numbers.
- Bring the data back into your Power BI report, and use it to create a simple chart to prove that the billions really are being treated as numbers.
- Save the report as Billionaires.

Exercise 4

Use Query Editor to rename and split columns in a Game of Thrones worksheet.

Dataset
https://bit.ly/3cKNAru

Steps
- Create a new Power BI report, and load data from the Excel workbook into it. You should see two tables (Episodes and Series).
- Use Query Editor to tidy up the Episodes table.
    - Split the authors column in two.
    - Replace the resulting nulls with blanks.
    - Filter the data to show only episodes directed by Daniel Minahan.
- Create a pie chart based on this table showing viewing figures by episode. The pie chart should show how many people watched each episode directed by Daniel Minahan in the US.
- Save the report as Daniel Minahan.

Exercise 5

Use Query Editor to load and tidy up a list of FTSE share prices.

Dataset
https://bit.ly/3CQtC9o

Steps
- Create a new Power BI report and load the data from the workbook.
- In Query Editor, carry out the following transforms:
  - Choose to Use First Row as Headers (this may not always be necessary)
  - Remove all but the first, second, and fifth columns.
  - Rename the remaining columns to Company, Current price, and Last Closing
  - Prices are left-aligned, which suggests that Power BI is treating them as text. Change the data types of the last two columns so that they are (decimal) numbers.
  - Choose to add a new column.
  - Create a column that subtracts the last closing price from the current one, rename it, and sort by it descending order.
- Save this data back into Power BI, and use it to create a simple table. Totals would be meaningless in this context, so you should choose not to display them.
- Save this report as Share Prices, then close it down.

Exercise 6

Use Query Editor to cleanse a list of imported top websites.

Dataset
https://bit.ly/3xmbO4T

Steps
- Create a new Power BI report and load data from the Excel workbook.
- Make the first row the header row and rename and remove columns to have: Site, Domain, Alexa Rating, Type, and Country.
- Add in a column to number each row, and rename the resulting column to Ranking.
- Use splitting columns to derive the current Alexa rank, keeping the number but losing the bit in brackets after it:
- Load this data back into Power BI, and use it to create a chart that shows how many domains there are for each country and type.
- Save this report as Top Websites, then close it down.

Exercise 7

Use Query Editor to remove, transform and add columns to a tall buildings list.

Dataset

https://bit.ly/30UnyzT

Steps

- Create a new Power BI report, and load data from the CSV file.
- Tidy the data up in Query Editor to get: Building, Year, City, Country, Floors, Metres, Rank and Average Floor height (m)
- Back in Query Editor, use Column From Examples to add another column, Description, giving a description of each building. The description includes the building name, city, and height i.e. 23 Marina - Dubai (395 meters).
- Save this report as Skyscrapers, then close it down.

Section 2: Creating Basic Reports

Exercise 1

Create a basic report to show a simple table of Abba songs.

Dataset

https://bit.ly/3xeYEqs

Steps

- Load the data into a new report.
- Give the song title and release year columns in the imported table better names, and hide the album column (no one talks about albums anymore).
- Save this report as Mamma Mia, and close it down.

Exercise 2

Count the number of world events for each country and year.

Dataset

https://bit.ly/3CP5hkp

Steps

- Create a new Power BI report. Load the worksheets from the workbook, and use them to create a data model.
  - Your data model should only include columns you might want to display in reports.
- Now create a table and matrix, such that when you click on a continent (such as Africa) you see the number of events in each of its countries, by year:
- Your matrix should count the number of events for each year and country.

● Save this report, then close it down.

Exercise 3

Load 2 CSV files and one Excel workbook, and use this to report on films.

Dataset

https://bit.ly/3nKpzaj

Steps

- Create a new Power BI report, and load these 3 files to create a data model.
  ○ You'll have to create the relationships yourself.
  ○ You should also hide the id fields, as no one will be interested in showing them in any report.
- Rename the fields in the field well to make it more obvious what they represent:
- Create a table listing out the directors.
- Now create another table to list out the genres using the same look-and-feel.
- Create a third table to list out the films made by the director (or genre) that you've selected.
- Save this report, then close it down.

Section 3: Creating Charts

Exercise 1

Create a donut chart of population data, and morph this into a tree chart.

Dataset

https://bit.ly/3l6JCOu

Steps

- Create a new Power BI Desktop file, and load the Excel workbook.
- Create a donut chart of Population by Country in 2015.
  ○ The legend to the left-center, set a title and customized data label settings.
- Right-click to exclude South Asia and East Asia & Pacific from your chart (they're too big), and turn it into a tree chart.
- Save this as Donuts and trees, then close down this instance of Power BI Desktop.

Exercise 2

Compare the number of Abba songs released by year using a column chart.

Dataset

https://bit.ly/3l6idfH

Steps

- Open the Power BI report. It should contain Abba songs released in the 1970s and 1980s. The order may not be the same, but the report contains nearly 100 bundles of Swedish goodness.
- Create a column chart to compare the number of songs released each year.
- The fields you'll need for your column chart and Count of Song title.
  - Format the chart: Title, X-axis title, and Y-axis title.
- Save your report, then close it down.

Exercise 3

Compare the heights of skyscrapers by country and city, and create a KPI.

Dataset

https://bit.ly/3oUlCiM

Steps

- Open the Power BI report.
- To whet your appetite, create a cheeky card to show the number of skyscrapers.
  - Turn the Category Label off and the Title.
- Create a bar chart comparing the number of buildings for each country.
  - Your chart should show data labels inside the bars and have conditional formatting to show countries with more skyscrapers in darker colors.
- Add the City column to the chart and turn on drill mode. When you click on a bar in the chart you should see a count of the number of skyscrapers for each city in the country you've clicked on.
- Save your report and close it down.